WA 2917 10.5.92

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

89

QUALITY CONTROL REPORT

RCRA PERMIT
ADMINISTRATIVE RECORD
ITEM NUMBER
TOTAL MUNICER OF PAGES

TPH by Method 418.1

FILE COPY

Client:

Burlington Environmental Engineering

Lab No: Matrix:

27215qc1

Matrix: Units:

Soil mg/kg

Date:

October 5, 1992

DUPLICATE

Dup No. 27215-1

Parameter	Sample(S)	Duplicate(D)	RPD
Total Petroleum Hydrocarbons	49,000	50,000	2.0

RPD = Relative Percent Difference = $[(S - D) / ((S + D) / 2] \times 100$

METHOD BLANK

METHOD BLAI	<u>u</u>
Parameter	Blank Value
Total Petroleum Hydrocarbons	< 10



SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
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QUALITY CONTROL REPORT

Total Petroleum Fuel Hydrocarbons by Method 8015

Client:

Burlington Environmental Engineering

Lab No:

27215qc2 mg/kg

Units: Date:

October 5, 1992

METHOD BLANK

Parameter	Blank Value
Total Petroleum Fuel Hydrocarbons	< 10
SURROGATE RECOVERY% 1-chlorooctane o-terphenyl	111 113

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 1 of 3

Client: Burlington Environmental Engineering

Lab No: 27215qc3 Units: ug/kg

Date: October 5, 1992

Blank No: S6248

METHOD BLANK

Compound	Blank Value	PQL
Phenol	ND	330
bis(2-Chloroethyl) ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Benzyl Alcohol	ND	670
1,2-Dichlorobenzene	ND	330
2-Methylphenol	ND	330
bis(2-Chloroisopropyl)ether		330
4-Methylphenol	ND	330
N-Nitroso-Di-N-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	. ND	330
Benzoic Acid	ND	1,700
bis(2-Chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	670
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	670
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	1,700
Dimethyl phthalate	ND	330
Acenaphthylene	ND	330

Continued

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 2 of 3

Burlington Environmental Engineering Client:

Lab No: 27215qc3 Units: ug/kg

October 5, 1992 Date:

Blank No: S6248

METHOD BLANK

METHO	D BLANK	
Compound	Blank Value	PQL
3-Nitroaniline	ND	1,700
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	1,700
4-Nitrophenol	ND	1,700
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
2,4-Dinitrotoluene	ND	330
2,6-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl phenyl ether	ND	330
Fluorene	ND	330
4-Nitroaniline	ND	1,700
4,6-Dinitro-2-methylphenol	ND	1,700
N-Nitrosodiphenylamine	ND	330
4-Bromophenyl phenyl ether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	1,700
Phenanthrene	ND	330
Anthracene	ND	330
Di-n-butylphthalate	580	330
Fluoranthene	ND	330
Pyrene	ND	330
Butyl benzyl phthalate	ND	330
3,3'-Dichlorobenzidine	ND	670
Benzo(a)anthracene	ND	330
bis(2-ethylhexyl)phthalate	ND	330
Chrysene	ND	330
Di-n-octyl phthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenz(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

Continued. . . .

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 3 of 3

Client:

Burlington Environmental Engineering

Lab No:

27215qc3

Units:

ug/kg

Date:

October 5, 1992

Blank No: S6248

ND = Not Detected.

PQL = Practical Quantitation Limit - These are the detection limits for this sample. This number is based on sample size, matrix and dilution required.

SEMIVOLATILE SURROGATES

Surrogate	Percent	Control	Limits
	Recovery	Water	Soil
Nitrobenzene - d5	82	35 - 114	23 - 120
2-Fluorobiphenyl	70	43 - 116	30 - 115
p-Terphenyl-d14	69	33 - 141	18 - 137
Phenol-d6	79	10 - 94	24 - 113
2-Fluorophenol	86	21 - 100	25 - 121
2,4,6-TBP	83	10 - 123	19 - 122

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B: This analyte was also detected in the associated method blank. There is a possibility of blank contamination.
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206) 922-2310 - FAX (206) 922-5047

DATA QUALIFIER FLAGS

- ND: Indicates that the analyte was analyzed for but was not detected. The associated numerical value is the practical quantitation limit, corrected for sample dilution.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- C: The identification of this analyte was confirmed by GC/MS.
- B: This analyte was also detected in the associated method blank. There is a possibility of blank contamination.
- E: The concentration of this analyte exceeded the instrument calibration range.
- D: The reported result for this analyte is calculated based on a secondary dilution factor.
- A: This TIC is a suspected aldol-condensation product.
- M: Quantitation Limits are elevated due to matrix interferences.
- S: The calibration quality control criteria for this compound were not met. The reported concentration should be considered an estimated quantity.
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be
- X2: Contaminant does not appear to be "typical" product. Further testing is suggested for identification.
- X3: Identification and quantification of peaks was complicated by matrix interference; GC/MS confirmation is recommended.
- X4: RPD for duplicates outside QC limits. Sample was re-analyzed with similar results. Sample matrix is nonhomogeneous.
- X4a: RPD for duplicates outside QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike was diluted out during analysis.
- X6: Recovery of matrix spike outside QC limits. Sample was re-analyzed with similar results.
- X7: Recovery of matrix spike outside QC limits. Matrix interference is indicated by blank spike recovery data.
- X8: Surrogate was diluted out during analysis.
- X9: Surrogate recovery outside QC limits due to matrix composition.
- X10: Surrogate recovery outside QC limits due to high contaminant levels.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS 4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 1 of 3

Client:

Burlington Environmental Engineering

Lab No:

27215

Units: ug/kg

Date:

October 15, 1992

Blank No: S6259

METHOD BLANK

Blank Value	PQL
	- 4-
ND N	870 870 870 870 870 870 870 870 870 870
ND ND	1,300 870
ND ND	1,300 870 870 870
ND ND ND ND	870 870 3,300 870 870
	ND N

Continued

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 2 of 3

Client: Burlington Environmental Engineering

Lab No: 27215 Units: ug/kg

Date: October 15, 1992

Blank No: S6259

METHOD BLANK

METHO	D BLANK	
Compound	Blank Value	PQL
3-Nitroaniline	ND	3,300
Acenaphthene	ND	870
2,4-Dinitrophenol	ND	3,300
4-Nitrophenol	ND	3,300
Dibenzofuran	ND	870
2,4-Dinitrotoluene	ND	870
2,4-Dinitrotoluene	ND	870
2,6-Dinitrotoluene	ND	870
Diethylphthalate	ND	870
4-Chlorophenyl phenyl ether		870
Fluorene	ND	870
4-Nitroaniline	ND	3,300
4,6-Dinitro-2-methylphenol	ND	3,300
N-Nitrosodiphenylamine	ND	870
4-Bromophenyl phenyl ether	ND	870
Hexachlorobenzene	ND	870
Pentachlorophenol	ND	3,300
Phenanthrene	ND	870
Anthracene	ND	870
Di-n-butylphthalate	3,300	870
Fluoranthene	ND	870
Pyrene	ND	870
Butyl benzyl phthalate	ND	870
3,3'-Dichlorobenzidine	ND	1,300
Benzo(a)anthracene	ND	870
bis(2-ethylhexyl)phthalate	ND	870
Chrysene	ND	870
Di-n-octyl phthalate	ND	870
Benzo(b)fluoranthene	ND	870
Benzo(k)fluoranthene	ND	870
Benzo(a)pyrene	ND	870
Indeno(1,2,3-cd)pyrene	ND	870
Dibenz(a,h)anthracene	ND	870
Benzo(g,h,i)perylene	ND	870

Continued. . . .

QUALITY CONTROL REPORT

SEMIVOLATILE ORGANICS PER EPA SW-846 METHOD 8270

Page 3 of 3

Client: Burlington Environmental Engineering Lab No: 27215

Units:

ug/kg

Date:

October 15, 1992

Blank No: S6259

ND = Not Detected.

PQL = Practical Quantitation Limit - These are the detection limits for this sample. This number is based on sample size, matrix and dilution required.

* Compound was detected but below PQL. Value shown is an estimated quantity.

SEMINOLATILE SUPPOGATES

	SEMIVOLATILE	SURRUGATES			
Surrogate	Percent	Control	Limits		
	Recovery	Water	Soil		
Nitrobenzene - d5	93	35 - 114	23 - 120		
2-Fluorobiphenyl	81	43 - 116	30 - 115		
p-Terphenyl-d14	89	33 - 141	18 - 137		
Phenol-d6	82	10 - 94	24 - 113		
2-Fluorophenol	94	21 - 100	25 - 121		
2,4,6-TBP	90	10 - 123	19 - 122		

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS 4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

QUALITY CONTROL REPORT

TPH-418.1

Client:

Burlington Environmental Engineering

Lab No:

27215

Matrix:

Soil

Units:

mg/kg

Date:

October 15, 1992

DUPLICATES

Parame	ter	Sample (S)	Duplicate (D)	RPD
TPH	19,000	23,000	14.6	

RPD = Relative Percent Difference $= [(S - D) / ((S + D) / 2] \times 100$

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MSD No. 27267-1				-		
Parameter	Sample Result (SR)	Spiked Sample Result (MS)	Spike Added (SA)	%R	Spike Dup Result (MSD)	RPD
TPH	19,000	19,000	750	X5	21,000	10.0

%R = Percent Recovery $= [(MS - SR) / SA] \times 100$

RPD = Relative Percent Difference $= [(MS - MSD) / ((MS + MSD) / 2] \times 100$

OUALITY CONTROL REPORT

WTPH-D (Diesel Range Organics

Client: Burlington Environmental Engineering

Lab No: 27215 Matrix: Soil Units: mg/kg

Date: October 15, 1992

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MSD No. 27172-2 Spike Spiked Sample Sample Spike Dup Result Result Added Result &R RPD (MSD) (SR) (MS) (SA) Parameter < 25 379 405 94 399 5.1 WTPH-D

%R = Percent Recovery
= [(MS - SR) / SA] x 100

RPD = Relative Percent Difference
= [(MS - MSD) / ((MS + MSD) / 2] x 100

QUALITY CONTROL REPORT Semi-Volatile Organics

Client: Burlington Environmental Engineering

Lab No: 27215 Matrix: Soil Units: mg/kg

Date: October 15, 1992

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

MSD No. 27171-1							
COMPOUND	SPIKE (ug/kg)	SAMPLE RESULT	CONC MS	% REC	CONC MSD	% REC	RPD
1,2,4-Trichlorobenzene	4,300	ND	2,100	49	920	21	80
Acenaphthene	4,300	ND	3,100	72	1,900	44	48
2,4 Dinitrotoluene	4,300	ND	2,900	67	1,400	33	68
Pyrene	4,300	ND	3,300	77	2,000	47	48
N-nitrosodi-n- Propylamine	4,300	ND	2,800	65	1,400	33	65
1,4-Dichlorobenzene	4,300	ND	1,000	23	370	9	88
Pentachlorophenol	4,300	ND	1,800	42	860	20	71
Phenol	4,300	ND	2,800	65	1,500	35	60
2-Chlorophenol	4,300	ND	2,900	67	1,500	35	63
4-Chloro-3-Methylphenol	4,300	ND	2,500	58	1,200	28	70
4-Nitrophenol	4,300	ND	1,200	28	1,000	23	20

RPD = Relative Percent Difference

% REC = Percent Recovery

*QC Limits:	RPD	<pre>% RECOVERY</pre>
1,2,4-Trichlorobenzene	23	38-107
Acenaphthene	19	31-137
2,4 Dinitrotoluene	47	28-89
Pyrene	36	35-142
N-nitrosodi-n-		
Propylamine	38	41-126
1,4-Dichlorobenzene	27	28-104
Pentachlorophenol	47	17-109
Phenol	35	26-90
2-Chlorophenol	50	25-102
4-Chloro-3-Methylphenol	33	26-103
4-Nitrophenol	50	11-114

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Quantitation Report File: S6259 Data: S6259. TI 09/24/92 16: 22: 00 Sample: SBLK32 Conds.: METHOD 8270 Weight: Formula: 9/24/92 SOIL GPC Instrument: FINN 0.000 Submitted by: EP Analyst: EP Acct. No.: -AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT) Resp. fac. from Library Entry No Name 1,4-DICHLOROBENZENE-D4 1 2 NAPHTHALENE-D8 3 ACENAPHTHENE-D10 4 PHENANTHRENE-D10 5 CHRYSENE-D12 6 PERYLENE-D12 7 NITROBENZENE-D5 8 2-FLUOROBIPHENYL 9 TERPHENYL-D14 10 PHENOL-D5 11 2-FLUOROPHENOL 12 2, 4, 6-TRIBROMOPHENOL PHENOL 13 14 BIS(2-CHLOROETHYL)ETHER 15 2-CHLOROPHENOL 1.3-DICHLOROBENZENE 16 1, 4-DICHLOROBENZENE 17 18 BENZYL_ALCOHOL 19 1,2-DICHLOROBENZENE 20 2-METHYLPHENOL (O-CRESOL) 21 2,2'-0XYBIS(1-CHLOROPROPANE) 22 4-METHYLPHENOL (P-CRESOL - COELUTES WITH M-CRESOL) 23 N-NITROSO-DI-N-PROPYLAMINE 24 HEXACHLOROETHANE 25 NITROBENZENE 26 ISOPHORONE 27 2-NITROPHENOL 28 2,4-DIMETHYLPHENOL 29 BENZOIC_ACID 30 BIS(2-CHLOROETHOXY) METHANE 31 2,4-DICHLOROPHENOL 32 1, 2, 4-TRICHLOROBENZENE 33 NAPHTHALENE 34 4-CHLOROANILINE 35 HEXACHLOROBUTADIENE 36 4-CHLORO-3-METHYLPHENOL 37 2-METHYLNAPHTHALENE 38 HEXACHLOROCYCLOPENTADIENE 39 2, 4, 6-TRICHLOROPHENOL 40 2, 4, 5-TRICHLOROPHENOL 2-CHLORONAPHTHALENE 41 42 2-NITROANILINE 43 DIMETHYLPHTHALATE 44 ACENAPHTHYLENE

45 2,6-DINITROTOLUENE

3-NITROANILINE

47 ACENAPHTHENE

46

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No Name
48 2,4-DINITROPHENOL
49 4-NITROPHENOL
50 DIBENZOFURAN
No m/z Scan Time
1 152 770 8:15
2 136 1060 11:22
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No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
1	152	770	8:15	1	1.000	A BB	29560.	40.000 UG/	7. 15
2	136	1060	11:22	2	1.000	A BB	107318.	40.000 UG/	7. 15
3	164	1466	15:43	3	1.000	A BB	62566.	40.000 UG/	7. 15
4	188	1808	19:23	4	1.000	M XX	94692.	40.000 UG/	7. 15
5	240	2424	25:59	5	1.000	A BB	66732.	40.000 UG/	7. 15
6	264	2731	29:16	6	1.000	A BB	65012.	40.000 UG/	7. 15
7	82	900	9:39	2	0.849	A BB	50522.	46.659 UG/	8. 34
8	172	1322	14:10	3	0.902	A BB	91007.	45. 679 UG/	8. 16
9	244	2195	23:31	5	0. 906	A BB	86630.	44. 420 UG/	7. 94
10	99	717	7:41	1	0. 931	A BB	49897.	41.149 UG/	7. 35
11	112	486	5:13	1	0.631	A BB	42836.	47.066 UG/	8. 41
12	330	1651	17:42	4	0.913	A BB	11208.	44. 991 UG/	8.04

13 NOT FOUND

14 NOT FOUND

15 NOT FOUND

16 NOT FOUND

17 NOT FOUND

18 NOT FOUND

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20 NOT FOUND

21 NOT FOUND

22 NOT FOUND

23 NOT FOUND

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210 West Sand Bank Road P.O. Box 330 Columbia, IL 62236-0330 618/281-7173

CHAIN-OF-CUSTODY RECORD

C.O.C. SERIAL NO. 6061

PROJECT	NAM		91612 B			MAJOR TASK	1		d	18/	7	7	/	7	/	7		PRESER-	/		
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